# The reproductive biology and movement patterns of the draughtboard shark, (*Cephaloscyllium laticeps*): implications for bycatch management

by

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**Draughtboard shark, *Cephaloscyllium laticeps***

# DECLARATIONS

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# ABSTRACT

The draughtboard shark (*Cephaloscyllium laticeps*) is the most common shark on temperate reefs in southeastern Australia. In order to implement adequate management plans its reproductive biology and movement patterns were studied.

Females developed a single external-type ovary with a maximum follicle diameter of 35 mm. Vitellogenesis commenced at 10 mm follicle diameter. The male reproductive tract consisted of paired testis with spermatocysts undergoing diametric development.

The hormones testosterone, 17-β estradiol, progesterone and 11-ketotestosterone (males only) were examined to determine their role in reproduction. Testosterone and estradiol showed major changes during follicle development. Estradiol increased as the follicle developed before declining as the follicle reached maturity. Testosterone remained low during the first stages of follicular development and increased as the follicle reached maturity. Progesterone showed a peak just prior to ovulation. Testosterone was the only hormone that varied with maturity in males and no levels of 11-ketotestosteorne were detected.

Females were able to store sperm for at least 15 months and eggs were laid in pairs at monthly intervals. Juveniles hatched after 12 months.

The size at maturity and seasonality of reproduction were estimated using reproductive parameters obtained from dissected animals and from steroid hormones. The sizes at onset of sexual maturity by both methods were similar. Females laid eggs throughout the year with a peak in deposition between January and June. Elevated values of testosterone and progesterone coincide with this period of egg deposition. Males showed no seasonal pattern in reproduction although both testosterone and the amount of sperm in the seminal vesicle were marginally higher in the first semester of the year.

Movement studies were undertaken using conventional and acoustic tagging. The area of study included a marine reserve and the adjacent bays of southeast Tasmania. Both

methods demonstrate that the majority of sharks remained in the same region in which they were tagged, although a few sharks moved large distances. Sharks were active throughout the day and night with peak activity during dawn and dusk. This species could remain stationary on the bottom for periods up to five days. No correlation was found between activity and lunar patterns and both sexes showed similar activity patterns

This study has provided the first information on reproduction and movement of draughtboard shark and demonstrated the potential for hormones to provide reproductive information necessary for management without the need to sacrifice the shark.

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